Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
Attorney Docket No.:   180/124/2

FIGURE 1A

9.1 (SEQ ID NO:1):   5' GGGAGAGAGG AAGAGGGAUG GG CCGCCAGU
GGGAAGCUAU ACCCAACGCC CCAGCCCCAG AGCAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.2 (SEQ ID NO:2): 5' GGGAGAGAGG AAGAGGGAUG GGCUAUAUAC ACGCUGGUGA
UCCCAUCUCA AUUGAAACAA CACAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

9.3 (SEQ ID NO:3): 5' GGGAGAGAGG AAGAGGGAUG GGGACUAUAC CGCGUAAUGC
UGCCUCCCCA UUCCGGAACG CUCAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

9.4 (SEQ ID NO:4): 5' GGGAGAGAGG AAGAGGGAUG GGCACUAUAC GCAUCUUGCU
GCCUGCCCGC GAGUCAAAUU GCAUAACCCA GAGGUCGAUA GUACUGGAUC CCCCC 3'

9.5 (SEQ ID NO:5): 5' GGGAGAGAGG AAGAGGGAUG GGCCUACCAG UUCGUGGCUA
GCGUGACGUA CCACCCAGGG ACCAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

9.7 (SEQ ID NO:6): 5' GGGAGAGAGG AAGAGGGAUG GGCGAUAACC AACAUGGUGA
UCCCAUUCAU CAUACCCUAC AACAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

9.8 (SEQ ID NO:7): 5' GGGAGAGAGG AAGAGGGAUG GGGCCACCUA CUAUACCGGU
CAUCGUGCAU AGGUCGCUGC CACAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

9.9 (SEQ ID NO:8): 5' GGGAGAGAGG AAGAGGGAUG GGUCUCACAC CCGAAGAUGG
CCAAAGAGGG AGAUGAGUUU CCAUAACCCA GAGGUCGAUA GUACUGGAUC CCCCC 3'

9.11 (SEQ ID NO:9): 5' GGGAGAGAGG AAGAGGGAUG GGACUAUAUU CGGAAUCUGG
ACUCCCACCU GCCUGCCCCA GACAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

9.12 (SEQ ID NO:10): 5' GGGAGAGAGG AAGAGGGAUG GGCGAUAUAC
ACAUUGGUGA UCCCACCCAC AUGAAACCAC AGCAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.13 (SEQ ID NO:11): 5' GGGAGAGAGG AAGAGGGAUG GGCUCAUCAC
AGGCGAAGUG AACAACACUA CCGNCNAGUU ACCAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.14 (SEQ ID NO:12): 5' GGGAGAGAGG AAGAGGGAUG GG GACUAUAC
GUGAACGACU GCAUCCACUUC CCcGCCAUGG CAUAACCCAG AGGUCGAUAG
UACUGGAUCC CCCC 3'

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FIGURE 1B

9.16(SEQ ID NO:13): 5' GGGAGAGAGG AAGAGGGAUG GGCCAUACGU
GGACGACUGC ACCCGACCCU UCAGCCCAGG UCCAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.17(SEQ ID NO:14): 5' GGGAGAGAGG AAGAGGGAUG GGACCAUACG
CACAUUGCUG AAUCCCCcUC AAUAGCACCU ACCAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.18(SEQ ID NO:15): 5' GGGAGAGAGG AAGAGGGAUG GGCCAUAACC
ACUUUGGUGA ACCCACCCAG CUCc/UUGUGAU UGCAUAACCC AGAGGUCGAU
AGUACUGGAU CCCCCC 3'

9.19(SEQ ID NO:16): 5' GGGAGAGAGG AAGAGGGAUG GGACCAUAAC
GACUACUCGUGA AUCCCACCAU CAGCGCACAA CAUAACCCAGA GGUCGAUAG
UACUGGAUCC CCCC 3'

9.20(SEQ ID NO:17): 5' GGGAGAGAGG AAGAGGGAUG GGGACUAUAC
CGGCAAUCGU GCAUCCCCUG GACCUAACAA UACAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.21(SEQ ID NO:18): 5' GGGAGAGAGG AAGAGGGAUG GG AACACCAU
UAAUGCUCGG CCAGGUAACC CCGGCGCAUA CUCAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.25(SEQ ID NO:19): 5' GGGAGAGAGG AAGAGGGAUG GGGACCAUAA
CUCUAACGGG UGAAUCCCGC AUCUCGACAA UACAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.26(SEQ ID NO:20): 5' GGGAGAGAGG AAGAGGGAUG GG UGAUAACC
ACUCUGGUGA ACCCCUCCCG ACUUGCUCGC ACAUAACCCA GAGGUCGAUA GUACUGGAUC
CCCCC 3'

9.27(SEQ ID NO:21): 5' GGGAGAGAGG AAGAGGGAUG GGUAAUAACU
GUAUGGUGAA CCCACCCAAA CUCCCAUGGC UACAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

9.28(SEQ ID NO:22): 5' GGGAGAGAGG AAGAGGGAUG GG CGCCAUAC
GCACAUUGCU GCAUCGCCUU CCCGUAAGAA CCAUAACCCA GAGGUCGAUA GUACUGGAUC
CCCCC 3'

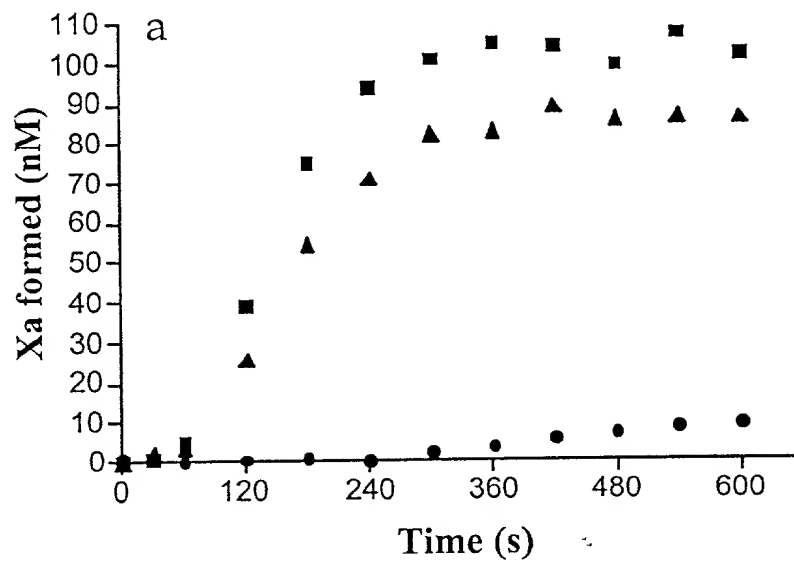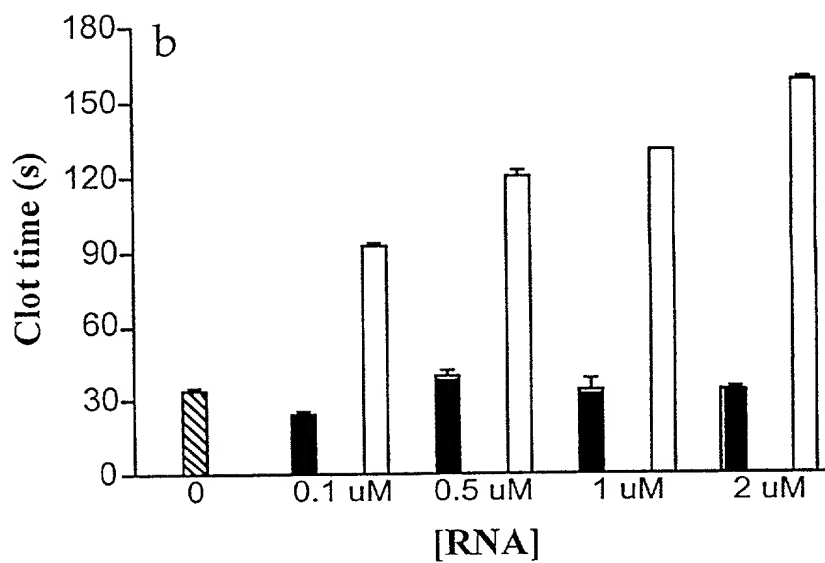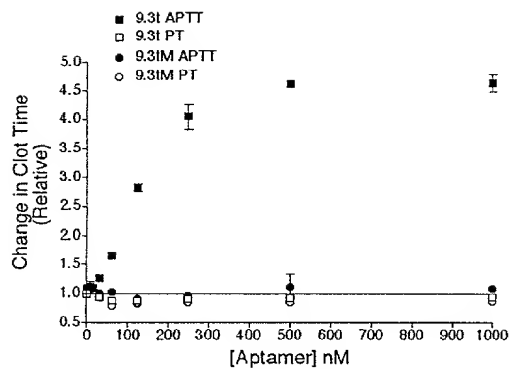Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
Attorney Docket No.:   180/124/2

FIGURE 2A

FIGURE 2B

Title: RNA Aptamers and Methods for Identifying the Same
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Figure 3A

Figure 3B

Figure 3C

Title: RNA Aptamers and Methods for Identifying the Same
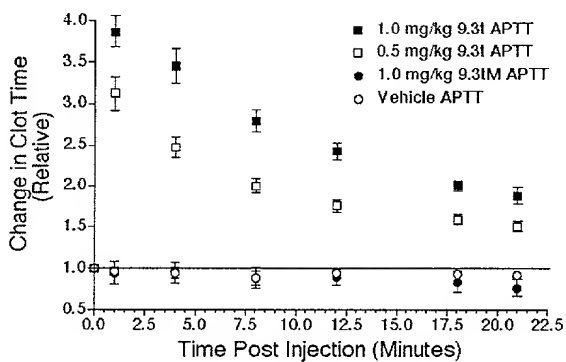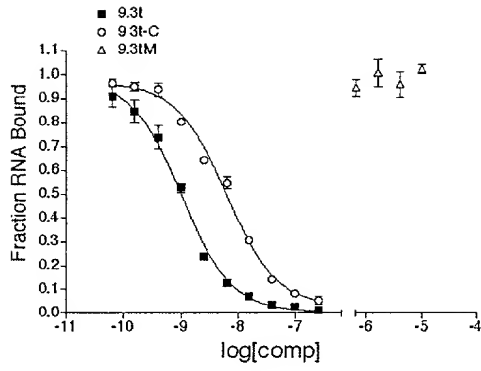Applicant(s):   Sullenger et al.
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Figure 4A

Figure 4B

Figure 4C

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Figure 5A

Figure 5B

Figure 5C

Title: RNA Aptamers and Methods for Identifying the Same
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Attorney Docket No.:   180/124/2
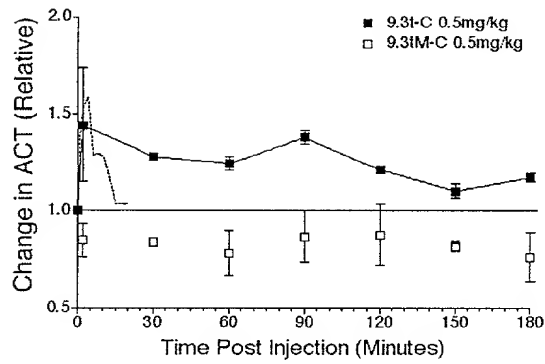
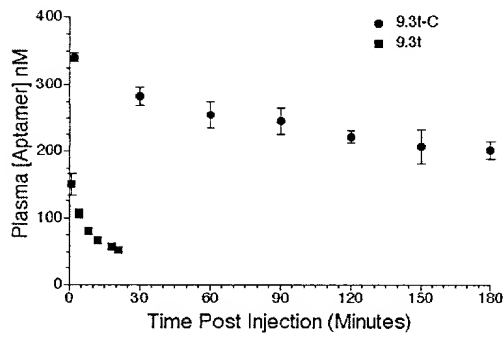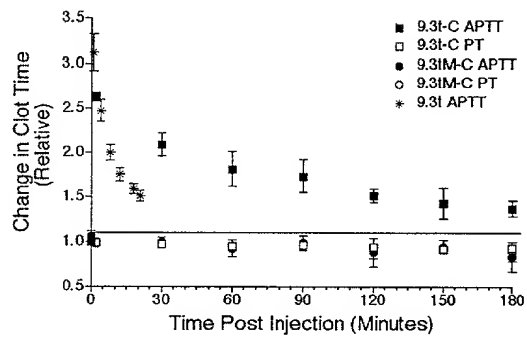## Figure 6A

10.1(SEQ ID NO:23):   5' GGGAGAGAGG AAGAGGGAUG GGAAAAUAGC
CCCAGCGAGA UAAUACUUGG CCCCCGUACCA CCAUAACCCA GAGGUCGAUA
GUACUGGAUC CCCCC 3'

10.5(SEQ ID NO:24):   5' GGGAGAGAGG AAGAGGGAUG GGCCAGAAGG
AACUAAACAC CUGAACCCCC CAUCGCGAGAG ACCAUAACCC AGAGGUCGAU
AGUACUGGAU CCCCCC 3'

10.6(SEQ ID NO:25):   5' GGGAGAGAGG AAGAGGGAUG GGAUGUCACU
UGGCCCCUCG CGCACc/aCGCC AGCGAGCCCA UAACCCAGAG GUCGAUAGUA
CUGGAUCCCC CC 3'

10.7(SEQ ID NO:26): 5' GGGAGAGAGG AAGAGGGAUG GGACACGCCC
AGCGAGCUCA AACUUGGCCC CCGUGCAUCA CC CCAUAACC CAGAGGUCGA
UAGUACUGGA UCCCCCC 3'

10.8(SEQ ID NO:27): 5' GGGAGAGAGG AAGAGGGAUG GGAAGUGCCA
CAGCGAGCAC AUGACUUGGC CCCGCAUUGC ACCCAUAACC CAGAGGUCGA UAGUACUGGA
UCCCCCC 3'

10.11(SEQ ID NO:28): 5' GGGAGAGAGG AAGAGGGAUG GGAAACUAAU
GCCCUAGCGA GCAUACCCGG ACUGGCCCCG CCAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

10.12(SEQ ID NO:29): 5' GGGAGAGAGG AAGAGGGAUG GGAAAAUAGC
CCCAGCGAGA UAAUACUUGG CCCCGCUACU ACCCAUAACC CAGAGGUCGA UAGUACUGGA
UCCCCCC 3'

10.13(SEQ ID NO:30): 5' GGGAGAGAGG AAGAGGGAUG GGCGACCCCA
CUGGCGGAAA CCGACAAUCA CUCCCCACGA CCAUAACCC AGAGGUCGAU AGUACUGGAU
CCCCCC 3'

10.14 (SEQ ID NO:73):   5'GGGAGAGAGG AAGAGGGAUG GGAAAAUAGC
CCCAGCGAGA UAAUACUUGG CCCCGCUACU ACCAUAACCC AGAGGUCGAU AGUACUGGAU
CC 3'

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Figure 6B

10.15(SEQ ID NO:31): 5' GGGAGAGAGG AAGAGGGAUG GGCAGCCCAG
CGAGGGACAC UUAACCCCCU GUCCCCCAUC CAAACCAUAA CCCAGAGGUC GAUAGUACUG
GAUCCCCCC 3'

10.18(SEQ ID NO:32): 5' GGGAGAGAGG AAGAGGGAUG GGCCAGAAGU
CACCGCGACG GUACUGAACC CCCCACCCAA ACCCAUAACC CAGAGGUCGA UAGUACUGGA
UCCCCCC 3'

10.19(SEQ ID NO:33): 5' GGGAGAGAGG AAGAGGGAUG GGCCAGAAGU
GCUCACUACA ACGCUUUGAC CCCCCAUCC ACAUCCCAUA ACCCAGAGGU CGAUAGUACU
GGAUCCCCCC 3'

10.21(SEQ ID NO:34): 5' GGGAGAGAGG AAGAGGGAUG GG CCAGCAAC
CGAAGGGCGG AAUACCCCCC GUCUCCACAU ACCCAUAACC CAGAGGUCGA UAGUACUGGA
UCCCCCC 3'

10.22(SEQ ID NO:35): 5' GGGAGAGAGG AAGAGGGAUG GG ACGCGACU
CAGGCAGCAC UUGACUUGGC CCCUUGCGAU CACCAUAACC CAGAGGUCGA UAGUACUGGA
UCCCCCC 3'

10.23(SEQ ID NO:36): 5' GGGAGAGAGG AAGAGGGAUG GG CCAGCAAC
GCUAACACGG AAUACCCCCC ACCCCAACGU GCCCAUAACC CAGAGGUCGA UAGUACUGGA
UCCCCCC 3'

10.24(SEQ ID NO:37): 5' GGGAGAGAGG AAGAGGGAUG GG CUUCUCAA
CCGAAAUACA ACUUUAAAUC AUUUAUCACU UACCAUAACC CAGAGGUCGA UAGUACUGGA
UCCCCCC 3'

10.30(SEQ ID NO:38): 5' GGGAGAGAGG AAGAGGGAUG GGAUACGCCG
AUGCAAGCAU GUCCACACAC CGCAUGCCGU ACCCAUAACC CAGAGGUCGA UAGUACUGGA
UCCCCCC 3'

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Figure 7A

Figure 7B

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RNA:Protein Complexes

FIGURE 8

Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
Attorney Docket No.:   180/124/2

RNA:Protein Complexes

5.0 —— [IXa] uM —— 0

pH 7.4/ 10mM NaCl

pH 7.4/ 50 mM NaCl

pH 7.4/ 150 mM NaCl

pH 8.0/ 10mM NaCl

pH 8.0/ 50 mM NaCl

pH 8.0/ 150 mM NaCl

Free RNA

pH 7.4/ 10mM NaCl

pH 7.4/ 50 mM NaCl

pH 7.4/ 150 mM NaCl

pH 8.0/ 10mM NaCl

pH 8.0/ 50 mM NaCl

pH 8.0/ 150 mM NaCl

FIGURE 9

Title: RNA Aptamers and Methods for Identifying the Same
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Figure 10

16.1: (SEQ ID NO:39) 5' GGGAGAGAGG AAGAGGGAUG GGUACAGAGG AGUACAAGUA GCAUGGUCCC CUCGUGUAAA AACAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

16.2 (SEQ ID NO:40): 5' GGGAGAGAGG AAGAGGGAUG GGUGCAAAAG AGCUUCUUGU AGUAUGAUCC CUCAACCGCA AGCAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'
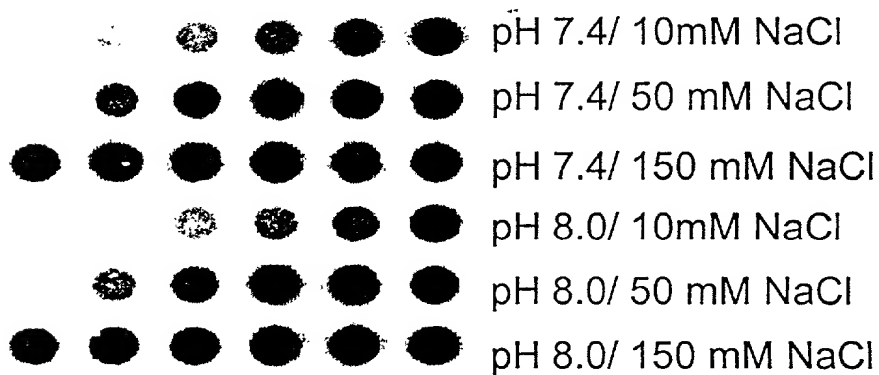
16.3 (SEQ ID NO:41): 5' GGGAGAGAGG AAGAGGGAUG GG UACAGAGG AGUACAAGUA GCAUGAUCCC CUCGUGUAAA AACAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

16.5 (SEQ ID NO:42): 5' GGGAGAGAGG AAGAGGGAUG GGAGCCUAUG UAACAGAUGC AGAUCCCUAG UCGUCCCAAC ACCAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

16.7 (SEQ ID NO:43): 5' GGGAGAGAGG AAGAGGGAUG GGCACAACGA ACACCGCAUC CCUUGACAGA AAGAGCACGC CUCAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

16.10 (SEQ ID NO:44): 5' GGGAGAGAGG AAGAGGGAUG GGUACAGAGG AGUACAAGUA ACAUGAUCCC CUCGUGUAAA AACAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

16.11 (SEQ ID NO:45): 5' GGGAGAGAGG AAGAGGGAUG GG CACAACGA ACACCGCAUC CCUUGACAGA AAGAACACGC CUCAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

16.18 (SEQ ID NO:46): 5' GGGAGAGAGG AAGAGGGAUG GGCACAAGGA ACACCGCAUC CCUUGACAGA AAGAACACGC CUCAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'
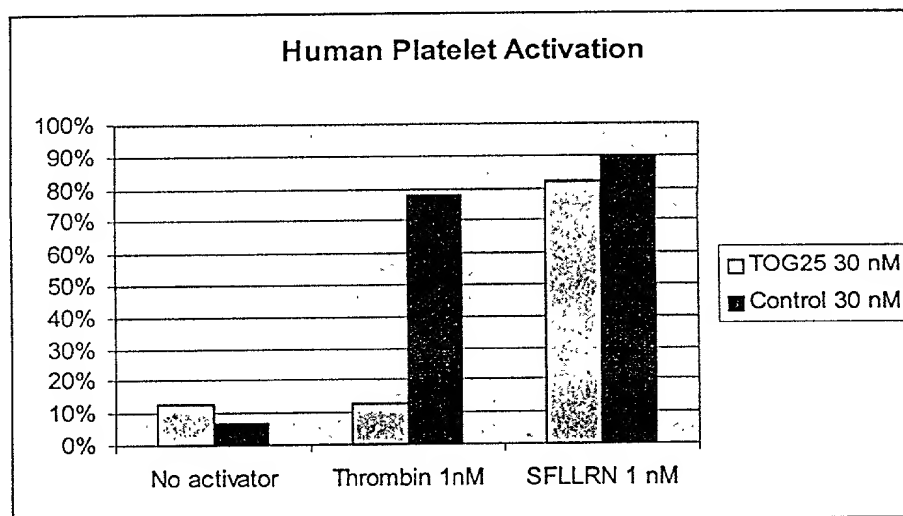
16.20 (SEQ ID NO:47): 5' GGGAGAGAGG AAGAGGGAUG GGAGCCUAUG UAACAGAUGC AGAUCCCUAG ACGACCCAAC ACCAUAACCC AGAGGUCGAU AGUACUGGAU CCCCCC 3'

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Attorney Docket No.: 180/124/2

FIGURE 11

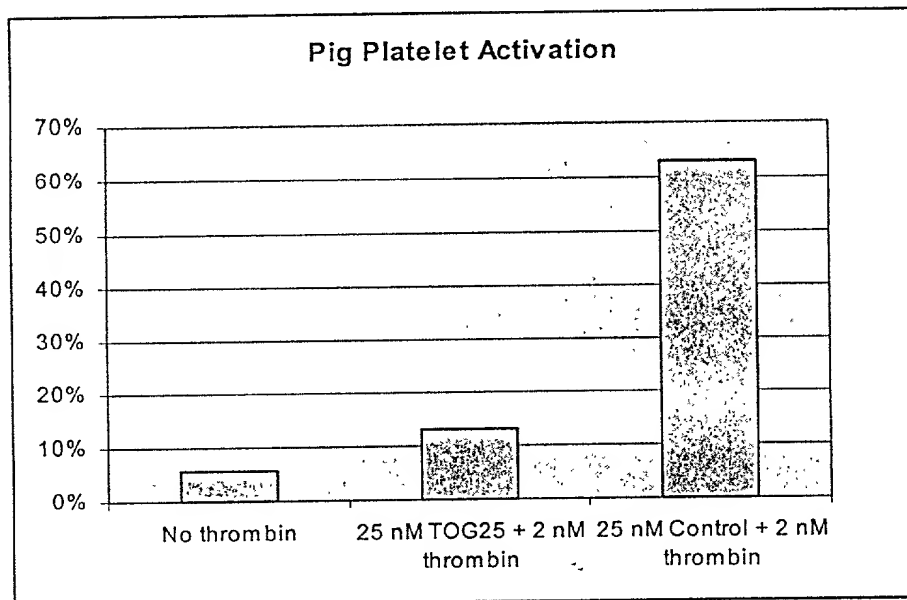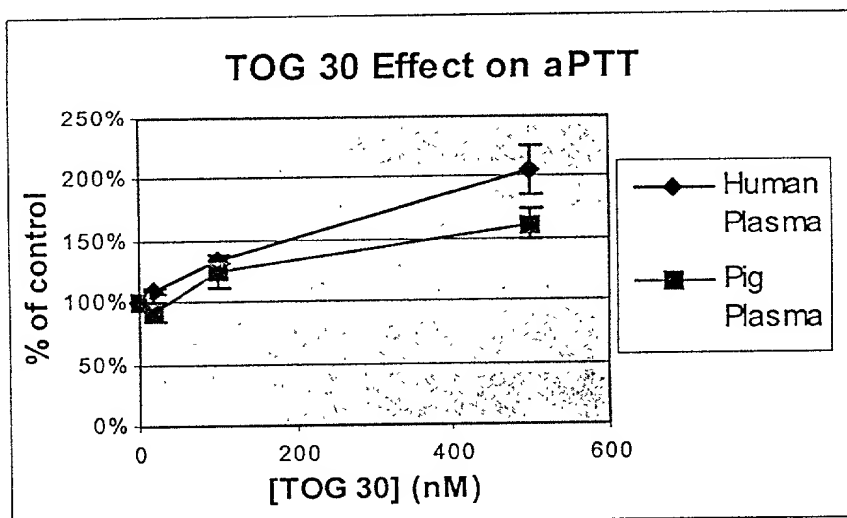| Random region sequences (Round 13)	K_d Human Thrombin	K_d Porcine Thrombin
PIG 5 UGCG*AACAAAGCUGAAGUACUU*ACGCACAACCCGUAGAAU	3 nM	1 nM
PIG 7 *AACAACUGAAGAACUACCC*UUCUUACUGACGAAUUAA	1 nM	<0.5 nM
PIG 8 A*AACAAAGCUGAAGUACUU*AUUCCAUCACCACGCCGGAA	1 nM	0.5 nM
PIG 10 UAUUUGGCUUCUCAGUGCCGCAGAGACAGCAACAAUUAGU	>>50 nM	0.5 nM
HUMAN *ACAAAGCUGGAGAACUU*ACCGUUCCCUCUCCAGAGAUCAA	2 nM	0.5 nM
TOGGLE 25 G*AACAAAGCUGAAGUACUU*ACCCAAGAUCAUCCCGAACGA	5 nM	0.5 nM
TOGGLE 30 *AACAAAGCUGGAGAACUU*AACGUCCCUCUCCCAGCGGUAA	3 nM	0.5 nM

FIGURE 12

Human Platelet Activation

Legend: TOG25 30 nM; Control 30 nM
X-axis: No activator, Thrombin 1nM, SFLLRN 1 nM

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Pig Platelet Activation

FIGURE 13

TOG 30 Effect on aPTT

FIGURE 14

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Figure 15

Title: RNA Aptamers and Methods for Identifying the Same
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Attorney Docket No.:   180/124/2

Figure 16

Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
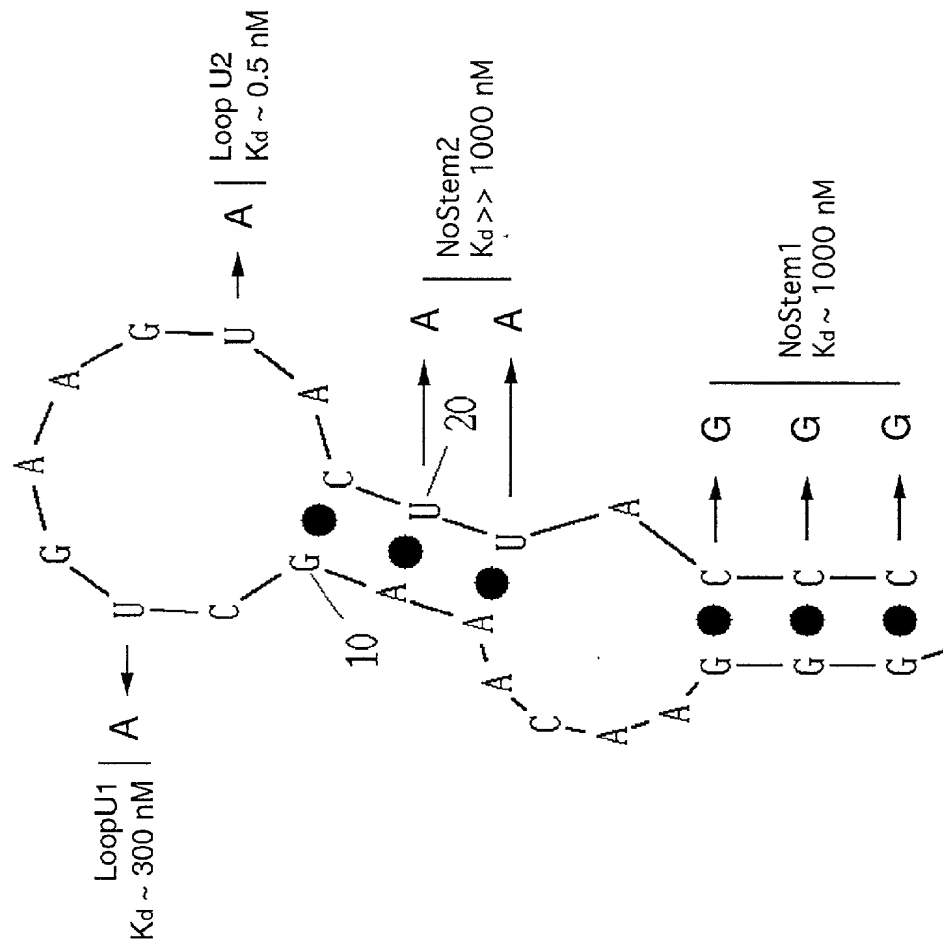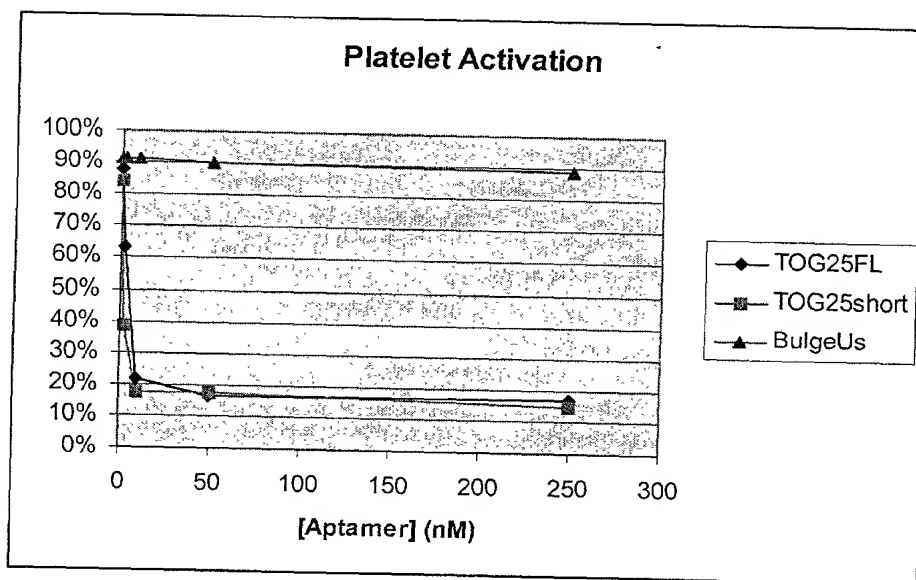Attorney Docket No.:   180/124/2

Figure 17

E2F-3 Round 10 Aptamers

5' Primer   GGG AGA GAG GAA GAG GGA UGG G   (SEQ ID NO: 62)

3' Primer   C AUA ACC CAG AGG UCG A A GUA CUG GAUCCC CCC   (SEQ ID NO: 63)

10-1 and 10-8 (SEQ ID NO: 64)
   5' P-AAU GGA AUC ACU GAA GGC CCU CCG UAG CAC CUA ACA CAGU-3' P

10-2 (SEQ ID NO: 65)
   5' P-GCAUCC UGC CAG CGG CGA CGG ACC UUC GCC CAC AGG CCUC-3' P

10-3, 10-7, 10-11, and 10-12 (SEQ ID NO: 66)
   5' P-UUA UA   AGC ACA CUG AAG CCC UCA GCA AAA CCU CCA CAG G-3' P

10-4 (SEQ ID NO: 67)
   5' P-UAU GAA AUC ACA GAA GCC CGC GUU CGA CAC CUC CAC UGUU 3' P

10-5 (SEQ ID NO: 68)
   5' P-CAA ACUCAC AGA CUC CAA CUG CAG GAG CAC CCA CCC ACA CUG
      GGA CAG-3' P

10-6 (SEQ ID NO: 69)
   5' P-AUC CCC GCC GUA AGC CGU CCU GAU GGA CAC CAC ACU CCG C-3' P

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	S1	L1	S2	L2	S2	L3	S1
*9-3 5'	gggaugggGA	CUAUACC	GCG	UAAUGC	UGC	C	UCCCCAUUCC
*9-20 5'	augggGA	CUAUACCG	GCA	AUCG	UGC	A	UCCCCU
*9-25 5'	gggaugggGA	CCAUA	ACUC	UAAC	GGGU	GAA	UCCCGCAUCU
*9-26 5'	gggauggg	UGAUA	ACCA	CUC	UGGU	GAA	CCCCUCCC
*9-28 5'	gggaugggCG	CCAUAC	GCA	CAU	UGC	UGCAU	CGCCUUCCC
*9-19 5'	gagggaugggA	CCAUA	ACGA	CUAC	UCGU	GAA	UCCCACCAUC
9-17 5'	gagggaugggA	CCAUAC	GCA	CAU	UGC	UGAA	UCCCCCUC
9-11 5'	gggaugggA	CUAUA	UUCGG	AAU	CUGGA		CUCCCACCU
9-4 5'	gggaugggCA	CUAUAC	GCA	UCU	UGC		UGCCUGCCC
9-16 5'	agggauggg	CCAUA	CGU	GG	ACG	ACUGCA	CCCGACCCU
9-18 5'	gggauggg	CCAUA	ACCA	CUU	UGGU	GAA	CCCACCCA
9-7 5'	ggauggg	CGAUA	ACCA	ACA	UGGU	GAU	CCCAUUC
9-12 5'	gggauggg	CGAUA	UAC	ACAUUG	GUG	AU	CCCACCC
9-2 5'	gggauggg	CUAUAUA	CAC	GCUG	GUG	AU	CCCAUCUC
9-14 5'	gggaugggGA	CUAUA	CGU	GAACG	ACU	GCA	UCCACUUCCC
9-27 5'	gggauggg	UAAUA	ACU	GUA	UGG	UGAA	CCCACCC

FIGURE 18

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Fig. 19A

Fig. 19B

Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
Attorney Docket No.:   180/124/2

Figure 20

Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
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Figure 21

Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
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Figure 22A

Figure 22B

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Figure 23A

Figure 23B

Title: RNA Aptamers and Methods for Identifying the Same
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Figure 24

ANG9-4 Binding

Figure 25

blot:

Ang1*:	-	+	+	+	+	+
fold-excess of aptamer:	0	0	10	100	10	100
aptamer:	none		9-4		control	

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Ang1:	−	+	+	+	+	+
Fold-excess aptamer:	0	0	10	100	10	100
Aptamer:	none		9-4		control	

Figure 26

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ANG11-1 Binding

Figure 27

Ang2:	−	+	+	+
Fold-excess aptamer:	0	0	10	10
Aptamer:		none	11-1	control

Figure 28

Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
Attorney Docket No.:   180/124/2

Figure 29

Title: RNA Aptamers and Methods for Identifying the Same
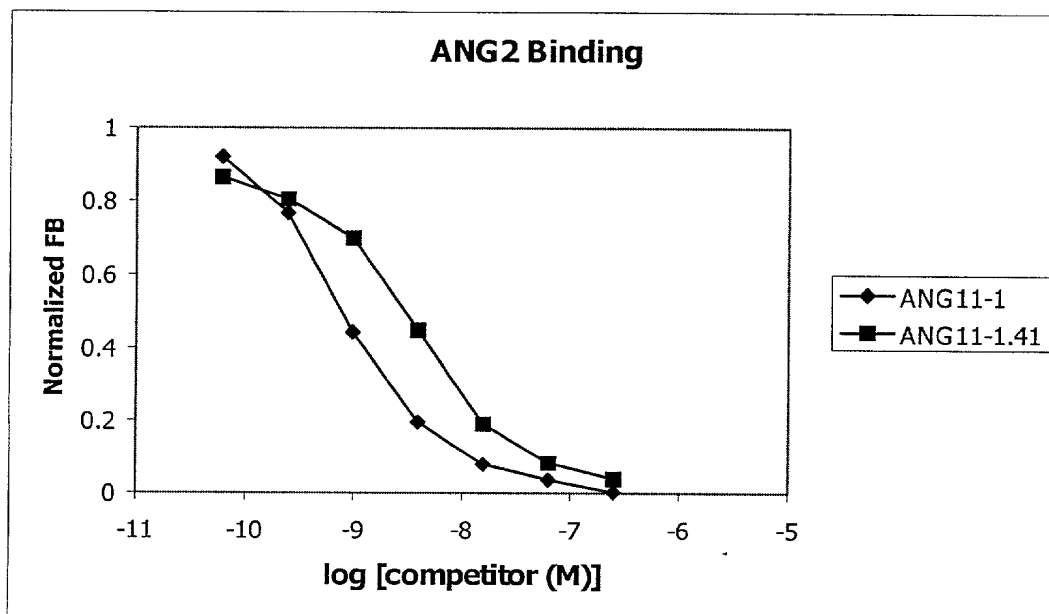Applicant(s):   Sullenger et al.
Attorney Docket No.:   180/124/2
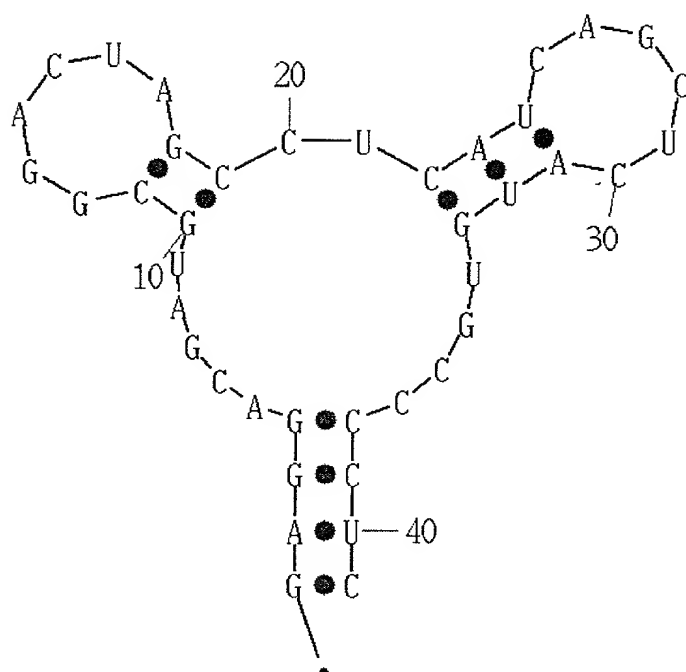
pit22jpg by D. Stewart and M. Zuker
©2001 Washington University

$dG = -1.43$ [initially -4.2]   ANG11-1.41

Figure 30

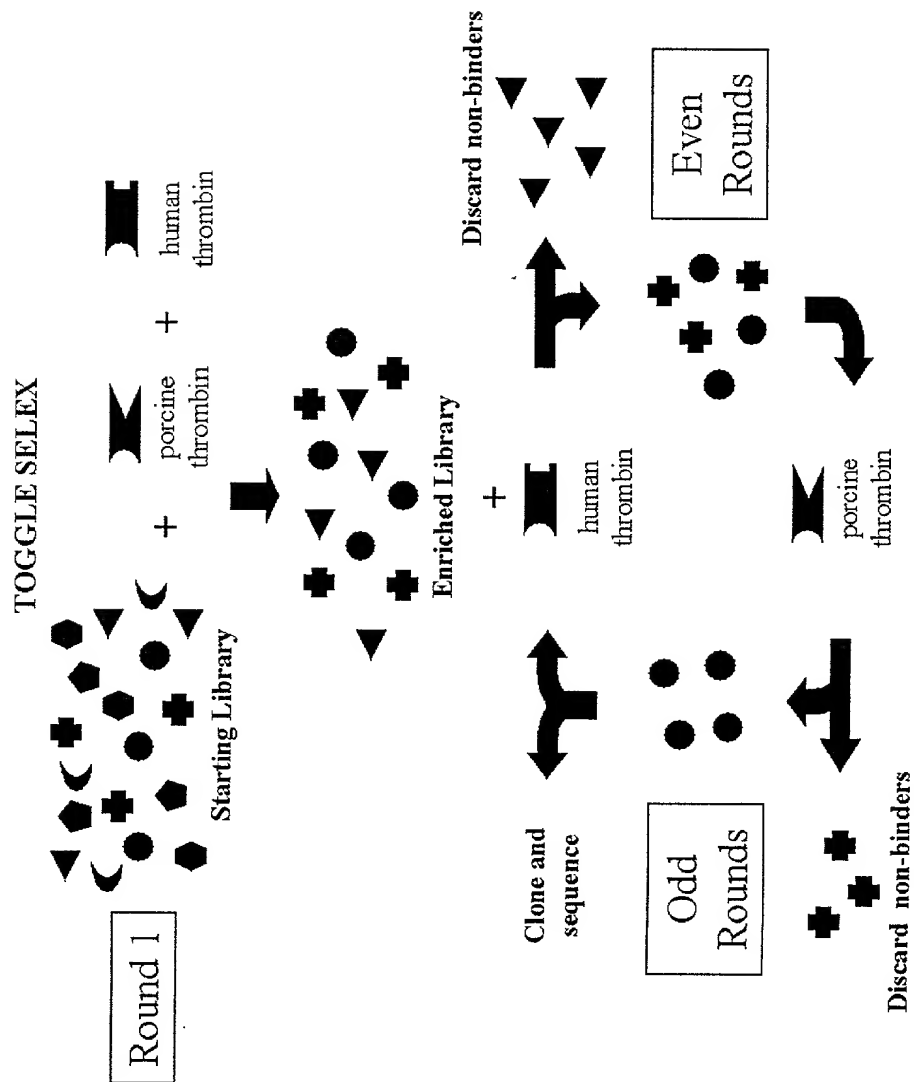Title: RNA Aptamers and Methods for Identifying the Same
Applicant(s):   Sullenger et al.
Attorney Docket No.:   180/124/2

Figure 31

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Attorney Docket No.:   180/124/2

Figure 32